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UNITED STATES PER CAPITA CONSUMPTION OF FISHERY PRODUCTS[1/]

INTRODUCTION

The annual consumption[2/] of fishery products in the continental United States since 1930 has ranged from about 8 to 12 pounds (edible weight basis[3/]) per person (see Table 1). In general, fish consumption has been increasing. Consumption in

Table 1 - U. S. Civilian Per Capita Consumption of Fishery Products, 1930-47

Year	Fresh and Frozen	Canned	Cured	Total fresh and Processed
	Pounds	Pounds	Pounds	Pounds
1930	5.9	3.3	1.3	10.5
1931	5.0	3.2	1.0	9.2
1932	4.4	3.4	1.1	8.9
1933	4.2	3.9	.9	9.0
1934	4.4	4.2	.9	9.5
1935	5.2	4.7	1.1	11.0
1936	5.2	5.8	1.0	12.0
1937	5.6	4.2	.9	10.7
1938	5.3	4.8	1.0	11.1
1939	5.4	4.6	.9	10.9
Average 1935-39	5.3	4.8	1.0	11.1
1940	5.7	4.2	.9	10.8
1941	6.3	4.7	.8	11.8
1942	5.3	2.2	.8	8.3
1943	5.6	1.9	.7	8.2
1944	5.6	2.6	.7	8.9
1945	7.1	2.6	.9	10.6
1946	6.3	3.8	1.0	11.1
1947	6.2	3.8	.8	10.8

1931 dropped more than a pound per capita below the 1930 level of 10.5 pounds, and declined again by almost a half pound during 1932. From that time on, the trend was upward until the onset of World War II. After a 3½-pound decline from the previous year in 1942 due to unusually large canned fish purchases for military agencies and export to allied nations, consumption again increased and by 1946, the prewar consumption level was regained.

1/ Excerpted from article, "Supply and Distribution of Fishery Products in the Continental United States, 1930-47", which appeared in the National Food Situation, July-September 1948. The study and article was prepared by Harry Sherr, Bureau of Agricultural Economics, in cooperation with Edward A. Power, Richard A. Kahn, and other specialists of the Branch of Commercial Fisheries, Fish and Wildlife Service.

2/ Civilian consumption is a residual figure, obtained after subtracting from total supplies: the year-end stocks, commercial exports and shipments, and the procurement by non-civilian agencies.

3/ Edible weight is the weight of the edible portion of the fin fish, mollusk, or crustacean. See Appendix.

Notes: The civilian consumption estimates indicated in this study are lower than those previously used because the latter (a) include the catch of sports and game fish by individuals, and (b) were calculated on the basis of marketed weight. The per capita consumption of fish caught by sport fishermen was previously estimated at 2.0 pounds. See "Consumption of Fishery Products in Canada" in October 1948 issue of Commercial Fisheries Review, page 37.

This leaflet supersedes Sep. 220, a reprint from Commercial Fisheries Review, November 1948, pages 1-10.

The general upward trend in fish consumption from 1932 to 1941 is due principally to technological advances and increased efficiency in the processing and distribution of fish. In the past, fish consumption was heaviest in the coastal areas of the United States. With the development of better production machinery, new methods of preparing and preserving fish by freezing, improved means of transportation, and more adequate local storage facilities, more commercial fishery products have been successfully merchandized in inland areas.

In addition, wartime scarcities of several foods and postwar increases in meat prices resulted in increased fish consumption for a large segment of the population and provided an opportunity for many people to become more accustomed to eating fish and fishery products. Recent studies in about 20 large inland cities have indicated that consumers prefer commercially frozen or packaged fish to locally caught fresh fish.

Food consumption per capita by United States civilians in 1948 will be slightly lower than last year, but still about 12 percent above the 1935-39 average. For 1948 as a whole, increases from last year's rate of per capita consumption are indicated for fresh and frozen fish, evaporated milk, margarine, and canned fruits and juices. These are more than offset by the decline in the available supplies of meats, chicken and turkey, ice cream, butter, fresh deciduous fruits, fresh vegetables, sweet potatoes, corn products, and sugar. Supplies of most livestock products are down from the highs of recent years, but still above the consumption rates of the late 1930's.

For only a few items is the per capita consumption rate falling below the prewar, 1935-39 average. These commodities are canned fish, sweet potatoes, butter, and perhaps shortening and other edible fats and oils.

FISH CONSUMPTION EXPECTED TO INCREASE

Civilian consumption of fish in 1948 is expected to exceed the per capita rate of 10.8 pounds (edible weight) of the previous year. Fresh and frozen fish consumption is likely to account for a large part of the increase. The relatively high price of other high protein foods probably will continue to encourage increased consumption of fishery products.

Civilian consumption of fish, especially fresh and frozen, during the remainder of the year is expected to be larger than it was during the same months of 1946 and 1947. Total supplies of fishery products during the latter part of 1948 probably will be much larger than a year earlier since consumer demand at prevailing prices is likely to encourage more extensive production activity and larger imports. However, canned fish supplies may not be much greater than last year. Although the 1948 production season is not yet in full swing, canned tuna production is about the same as in the comparable period last year, but the output of salmon and sardines (pilchards and Atlantic sea herring) is lower.

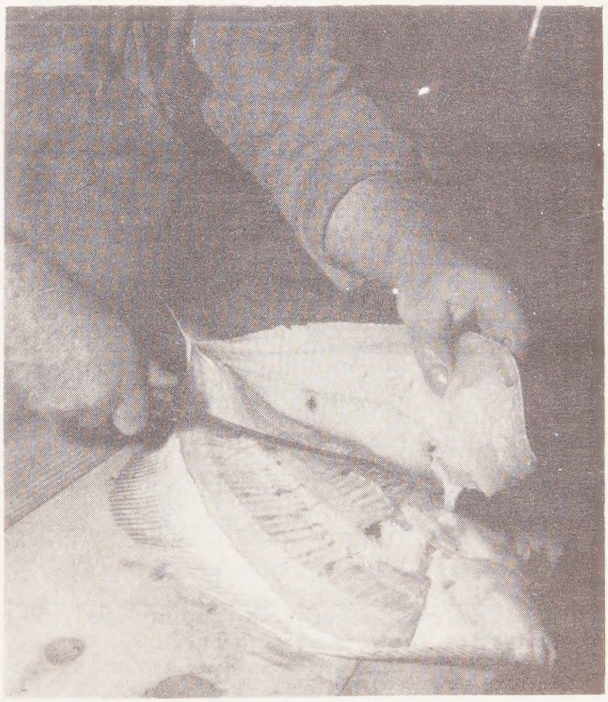
CONSUMPTION OF OTHER PROTEIN FOODS

For the year 1948 as a whole, civilian meat consumption is expected to average about 145 pounds per person (dressed meat basis), approximately 10 pounds less than the 155 pounds consumed in 1947, but almost 20 pounds greater than average consumption in 1935-39. For 1948 as a whole, egg consumption will about equal the near record 380 eggs (47.5 pounds) consumed per person in 1947. Supplies of chicken are expected to be somewhat smaller from now until early spring than they were in the same 1947-48 period. For 1948 as a whole, chicken consumption will be slightly lower than the 23.4 pounds per person (dressed weight) consumed in 1947. Supplies of turkey for the 1948 Thanksgiving and Christmas holiday season will be the smallest since the late 1930's. For 1948 as a whole, consumption will be slightly over 3 pounds per person, compared with the record of 4.5 pounds in 1947 and 1935-39 average of 2.6 pounds.

SUPPLIES

Production 4/

Production of fish and fishery products in the United States and Alaska has increased since 1930, the second year complete and adequate data on output were available (see Table 2). Occasional production declines have occurred since that time, but they were relatively short lived and output recuperated fairly rapidly. Except for 1942, the annual catch of fishery products since 1934 has totaled at least 4 billion pounds (round weight basis 5/). In 1941, the record catch of 5.1 billion pounds (round weight basis) was established. During the war years, 1942-45, production was maintained at a relatively high level through the recruitment of persons not previously engaged in the fishery industry, longer hours of work and through the intensive use of available production facilities.



FILLETING FLOUNDER

In general, fish production is seasonal--about 70 percent of the catch is made from May through October. Except for legal restrictions imposed by some States, weather conditions and the availability of fish are among the important factors which determine the length of the fishing season for individual species.

There are seven major fish producing areas in the continental United States. Because of the nature of the local fishery resources, each of these areas tends

4/ Production includes only the reported catch of fin fish and shellfish by domestic commercial fishermen.

5/ Round weight, except for mollusks, is the weight of the fish as landed. Catch statistics for mollusks are on a "meat" basis.

to specialize in a limited number of species of fish caught, and a limited number of forms in which the fish are marketed. These areas are:

1. New England States--Fresh and processed fish and shellfish--groundfish (cod, haddock, hake, pollock, and cusk), rosefish, flounder, sardines (Atlantic sea herring), whiting, clams, lobsters, and scallops.

2. Middle Atlantic States--Fresh fish and shellfish--butterfish, flounder, haddock, mackerel, scup (porgy), shad, sea trout, whiting, clams, and oysters.

3. Chesapeake Bay area--Fresh fish and shellfish--croaker, scup (porgy), shad, sea trout, striped bass, crabs, and oysters.

4. South Atlantic States--Fresh fish and shellfish--bluefish, bullheads, catfish, mullet, spot, Spanish mackerel, crabs, oysters, and shrimp.

5. Gulf States--Fresh and processed fish and shellfish--red snapper, crabs, oysters, and shrimp.

6. Great Lakes States--Fresh fish--carp, chubs, cisco, lake herring, lake trout, sheepshead, sucker mullet, whitefish, yellow perch, and yellow pike.

7. Pacific States6/--Fresh and processed fish and shellfish--salmon, sardines (pilchards), mackerel, tuna, rockfish, flounder, halibut, lingcod, sablefish, smelt, crabs, and oysters.

The major part of the fish caught in the United States and Alaska has been utilized as food, from 60 to 70 percent of the total catch. The amount destined

Table 2 - Index numbers of average monthly retail prices of specified foods in leading cities1/ and average monthly retail price for canned salmon in the United States, 1939-47 (1935-39 average = 100)

Year	Fresh & frozen fish	Red salmon	Pink salmon	Meats	Dairy products	Eggs
	Index No.	¢ per lb.	¢ per lb.	Index No.	Index No.	Index No.
1947.....	243.4	2/	42.4	214.7	186.2	200.8
1946.....	240.6	44.03/	25.33/	150.8	165.1	168.8
1945.....	220.4	40.4	23.3	118.0	133.9	164.4
1944.....	209.6	42.0	23.5	117.9	133.6	153.0
1943.....	209.0	41.3	23.5	124.2	134.6	161.9
1942.....	160.0	39.8	21.6	122.5	125.4	136.5
1941.....	119.2	30.4	17.9	106.5	112.0	112.2
1940.....	106.7	25.7	15.6	94.4	101.4	93.8
1939.....	99.8	23.6	13.1	96.6	95.9	91.0

1/ 51 cities covered prior to February 1943, 56 cities thereafter. Data from Bureau of Labor Statistics, Department of Labor.

2/ June was the last month in 1947 for which retail price information was collected. The 6-month average is 60.4 cents per pound.

3/ 11-month average price.

for human consumption has been almost equally divided between canned fish, and fresh and frozen fish. The quantity of fish that has been utilized as cured fish has been declining slightly. During the 18-year period, cured fish represented from about 2 to 3 percent of the total catch except from 1930 to 1933 when it ran slightly higher.

6/ Excluding Alaska.

The over-all estimates on the quantity of fish utilized fresh and frozen, fail to reflect an important internal shift--specifically the year to year increase in the quantity of fish frozen for human consumption. The amount of frozen fish produced in recent years represents more fish (round weight basis) than in the past because of the increasing quantity of fish fillets frozen. For some species the fillet represents as little as 25 to 30 percent of the weight of the unprocessed fish (round weight basis).

The most important canned fish items produced in the continental United States are salmon, sardines (pilchards and Atlantic sea herring) and tuna. From 1930 to 1946 more sardines (pilchards) were canned than any other single species of fish. In 1947, the leading fish canned were tuna and tuna-like fish.

Stocks

On an edible weight basis, the quantity of frozen fish reported held in commercial cold-storage facilities on January 1 each year has ranged from about 8 to 10 percent of the quantity of the previous year's catch utilized in the form of fresh and frozen fish. The estimated January 1 cold-storage holdings in 1933 and 1934 were about 7 percent of the corresponding preceding year's output and the beginning stocks of 1947 and 1948 were 13 and 11.5 percent, respectively. In view of the seasonally low catch in the late fall and winter seasons, frozen fish stocks are highest at the end of the year.

TYPES OF CONTAINERS USED FOR PACKING AND FREEZING PRE-COOKED FISH PRODUCTS

During the war period, cold-storage space became increasingly difficult to obtain. Military agencies maintained large stocks of foods and other merchandise under refrigerated storage conditions thus limiting the space available for civilian use. As of September 2, 1944, War Food Order 111 placed a ceiling on the quantity of frozen packaged fish that could be held in commercial cold-storage facilities. This regulation was terminated in 1946.

Adequate information on canned fish stocks is not available for any one of the 18 years covered in the analysis. However, since 1942, carryover stocks at most distribution levels have been unusually small and their absence from the analysis has had very little, if any, effect on the adequacy of the estimates of civilian consumption of canned fish.

Data on cold-storage stocks of cured fish not subject to reprocessing first became available as of January 15, 1941. They include smoked fish only. In view of the relatively small quantity of cured fish consumed in the continental United States, stocks maintained in commercial cold-storage facilities have been relatively unimportant.

Imports and Receipts from Alaska

Receipts of fish from Alaska and foreign countries have been an important part of the corresponding annual supplies in continental United States. From 1930 to 1939, imports and receipts from United States territories, principally Alaska, were from 30 to 40 percent of domestic supplies. Following the outbreak of World War II in Europe in 1939, imports from European countries were drastically reduced, and, after 1941, imports from Asia virtually ceased. Since 1940, receipts from Alaska and other producing areas outside the United States have ranged from 25 to 28 percent of continental United States supplies.

Canada and Newfoundland have always been the largest suppliers of fish to the United States. Since 1939, they have become more important. Trade with Iceland, a large supplier of cured fish, diminished during the war. However, since 1945, in addition to the cured product, this country has increased its shipments of frozen fish fillets. Japan was a principal source for frozen and canned tuna and canned crab meat before the war, but since that time receipts of fish from Japan have been insignificant.

Imports of fresh and frozen fish have been increasing since 1934. Prior to the war, they were from 10 to 14 percent of the corresponding annual supplies of this country. From 1941 on, receipts of fresh and frozen fish from abroad increased each year until, in 1945, they amounted to almost 16 percent and in both succeeding years were more than 16 percent of the domestic supplies in the corresponding period. The bulk of these imports is comprised of groundfish (cod, haddock, hake, pollock, and cusk) and rosefish fillets from Canada, Newfoundland, and Iceland.

Most of the imports (including receipts from United States territories, principally Alaska) are canned fish products. During the period 1930-42, they accounted for about 70 percent of the total fish imports into the continental United States. From 1943 on they ranged from about 45 to 60 percent of total imports.

Canned salmon receipts from Alaska have always been significantly large. For most of the 18-year period, they accounted for 75 to more than 86 percent of the total canned fish receipts in continental United States. During the period 1941 to 1945, canned salmon shipments to this country ranged from 93 to almost 97 percent.

Until 1940, canned fish imports and receipts from United States territories provided from 45 to 70 percent of our total canned fish supplies. After that time, receipts from these sources ranged from 30 to 43 percent of total domestic supplies. Another indication of the significance of imports is the fact that prior to 1939, except for 1930 and 1935, receipts from abroad, including those from Alaska, exceeded domestic production of canned fish; in 1932, imports were 2½ times the quantity produced in this country. Since 1939, except for 1946 when the canned salmon output in Alaska was unusually low, imports ranged from 50 to 75 percent of domestic production.

Cured fish imports since 1930 have been a very important supplement to the domestic production of this commodity. For the 18-year period, receipts from Alaska and foreign sources were nearly equal to the quantity produced in the continental United States.

From 1942 to 1947, the quantity of canned fish and salted cod and related species imported into the United States from foreign producing areas was limited

in accordance with the allocation recommendations of the Combined Food Board and the International Emergency Food Council of FAO.1/ Under the provisions of War Food Order 72, in effect from August 1943 to October 1946, these recommendations were implemented and imports were prorated among domestic importers on the basis of the volume of business they conducted in the past years.

DISTRIBUTION AND PER CAPITA CONSUMPTION

United States fish supplies are distributed through commercial trade channels to civilians and foreign markets, and Government channels to United States military agencies and consumers abroad.

Fresh and Frozen Fish

The per capita consumption of fresh and frozen fish in the United States has risen from a low of 4.2 pounds (edible weight basis) in 1933 to 6.2 pounds in 1947 (see Table 1). The upward trend in consumption is principally the result of the increased consumption of fresh and frozen fish fillets. Before the war, the consumption of fish was concentrated in the coastal areas of the United States. Within the past 10 years, the quantity of fresh and frozen fish fillets consumed in the interior parts of the country has increased.

The development of fresh and frozen fish fillets, products which are convenient for household and institutional use, plus improvements in packaging, transportation, and local storage facilities did much to expand the domestic consumption of fish. The wartime shortage of canned fish and of many other foods stimulated consumer demand for fresh and frozen fish.

Purchases of fresh and frozen fish by United States military agencies increased rapidly after the United States entered World War II. In 1942, military purchases in market centers amounted to about 20 million pounds. They doubled in the year that followed and reached a peak of about 64 million pounds in 1944. Most of the fish was purchased for consumption by members of the armed forces stationed in the United States.

Fresh and frozen fish exports and shipments to United States territories have accounted for only a relatively small part of total fish supplies and they have declined since 1930. From 1936 to 1942, exports and shipments fell off each year.

1/ The Combined Food Board, comprised of representatives of the United States, Canada, and the United Kingdom, functioned as an agency which recommended allocations of, among other commodities, the exportable supplies of canned fish and salted cod and related species of the major producing areas among various countries. In 1946, the Combined Food Board was replaced by the International Emergency Food Council of the Food and Agricultural Organization of UN, and the membership enlarged to include the participating countries of FAO. Allocation recommendations for canned fish were discontinued after March 31, 1947, and for salted fish after June 30, 1947.

Canned Fish

The estimated per capita consumption of canned fish in the United States since 1930 has ranged from a high of 5.8 pounds in 1936 to a low of 1.9 pounds in 1942 (see Table 1). The large wartime demands of United States military agencies and allied countries made heavy inroads on the domestic canned fish supplies, and severely limited the quantity available for civilians.

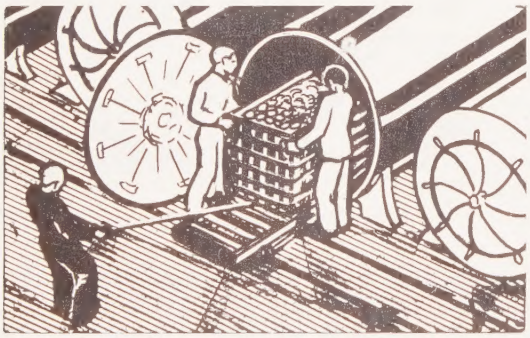
The unusually large wartime demand for canned fish, especially for salmon and sardines (both pilchards and Atlantic sea herring), made it necessary to control distribution. Administratively, this was effected through:

1. Government set-aside orders which required producers to reserve a specific portion of their current canned fish output for Government agencies,

2. Export licenses which permitted only the amount allocated to foreign countries to be shipped out of the United States,

3. The point rationing system which attempted to promote more equitable distribution of civilian supplies of canned fish.

Salmon has been the most popular of the canned fish. It accounted for 50 percent or more of the canned fish consumed in the United States between 1930 and 1940. In 1936, civilian per capita consumption of salmon was almost 3.5 pounds, well over half of the total of all canned fish consumed, 5.8 pounds. From 1942 to 1945, because of large procurement by United States military agencies and the Department of Agriculture, civilian supplies of canned salmon were small relative to demand and consumption per capita declined to about 20 to 30 percent of the total canned fish eaten.



FISH COOKING RETORT

Purchases of canned fish by United States military agencies were increased after the outbreak of the war, from 150 million pounds in 1942 to almost 260 million pounds in 1945. After the cessation of hostilities, military procurement dropped off considerably and in 1946 was at a minimum since there were large military stocks of canned fish to be used up. In 1947, after military stocks had been reduced, procurement again expanded, but to only a fraction of the rates reached during the war years.

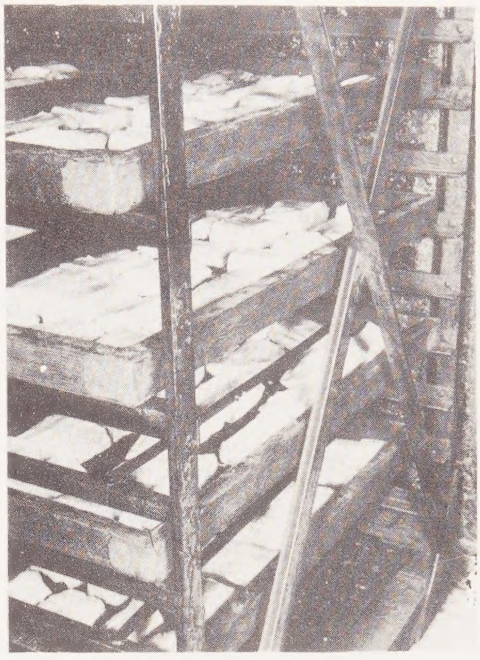
Exports and shipments to territories of canned fish, especially of salmon and sardines (pilchards), have always been fairly sizeable. From 1932 to 1939, exports and shipments ranged from 10 to 16 percent of the total quantity of canned fish moving into distribution channels. After the outbreak of war in Europe, the quantities withdrawn from current market supplies for export under lend-lease to allied countries--principally the United Kingdom, her dependent overseas territories and the British military forces--increased steadily. At their peak, in 1944, they amounted to almost 50 percent of the amount available for distribution.

During and just after the war, most of the exports of food from the United States were handled through the Department of Agriculture. Large purchases of

canned fish were made for lend-lease, the United States territories, UNRRA, and other foreign aid programs. After reaching a total of 181 million pounds in 1944, the Department's purchases declined. Since that time, procurement has been reverting to domestic private trade organizations.

Cured Fish

Consumption of cured fish in the United States has for many years been relatively small. Indicated domestic consumption in 1930, 1.3 pounds per capita, was the highest during the 18-year period covered by this study. Since 1930, civilian consumption has ranged from 0.7 to 1.1 pounds per capita. The relatively low level of cured-fish consumption in this country can, to some extent, be explained by the fact that Americans are not as dependent upon foods preserved by salting or smoking as are many of the citizens of other countries. Abundant supplies of varied foods such as meat, poultry, eggs, dairy products, and fresh and processed fruits and vegetables have been reflected in the general downward trend in the consumption of many food items that are staples in other countries.



SMOKING SALMON CHUNKS ON TRAYS

Military procurement of cured fish throughout the war years, 1942 to 1945, was relatively small. In 1942, military agencies took about 4 percent of the quantity which was available for distribution; in 1945, about 10 percent.

Annual exports and shipments of cured fish from the United States from 1932 to 1942 ranged from 5 to 10 percent of total supplies. After 1939, when fishing operations of European countries were severely restricted as a result of the war, the United States was called upon to increase cured fish exports to allied nations. As a result of this demand, the 1943 and 1944 outward movement of cured fish from the United States accounted for 20 to 25 percent of the domestic cured fish supplies. In the subsequent years, exports and shipments again declined to the prewar volume and reverted to commercial trade channels.

In general, prices of fish have tended to be low in comparison with meat, poultry, eggs, and dairy products. After 1940, the price of fish began to rise rather sharply as did the price of many food items (see Table 2).

APPENDIX

The data on supplies and distribution were converted to an "edible weight" basis using factors developed over a period of years. In general, for the purpose of converting the production estimates to an "edible weight" basis:

(a) canned, cured, and also fresh and frozen packaged fin fish were assumed to be 100 percent edible;

(b) fresh and frozen unpackaged fin fish were assumed to contain no more than 50 percent edible portion; and

(c) among the shellfish, the mollusks catch was assumed to be 100 percent edible because the data are reported on a "meat equivalent" basis, and the crustaceans were converted based on the average meat yield for each species.

For many individual species of fresh or processed fish, separate conversion factors were used depending on both the basis on which production statistics are reported and yield factors obtained both from laboratory tests and from fish processors' experience.